A Study on the Financial Effect of Share Repurchase of Listed Companies Based on Factor Analysis

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Abstract. This paper constructs the financial performance evaluation index system of listed companies by taking market share repurchase events from July 2015 to March 2016 as a sample study and testing the changes of the financial indicators of the listed company after the share repurchase, and the results show that the sample company's profitability, solvency, operational capacity, cost control and growth capacity and other performance indicators have improved after the announcement of the stock repurchase, which provides experienced data for stakeholders to fully understand, forecast and standardize the repurchase behavior of listed companies. At the same time, it also provides some reference for the supervision of China's share repurchase and the construction of laws and regulations.

Introduction

Foreign scholars found that share repurchase of listed companies will usually lead to different degrees of volatility and change in the company's stock prices and financial indicators and pass a certain signal to the market.The economic consequences of the Company's share repurchase are usually manifested in the market effect(Comment, et al, 1991; Ikenberry, et al, 2000;Su, et al., 2012) [1-3], financial effect(Dittmar, 2000) [4] and signal transmission effects(Gelb, 1999; Brav, et al, 2005) [5-6]. the short - term market effect of on stock repurchase(Yin Heng, 2007) [7] and the financial effect (Shi Tao, 2011) [8] were discussed by Chinese scholars, but on the whole, most of its research is limited to case studies and lack of broad representation.In this paper, the author takes the open market share repurchase event from July 2015 to March 2016 as a research sample and tests the changes of the financial indicators of the listed company after the share repurchase [9-12] , which provides experienced data for stakeholders to fully understand, forecast and standardize the repurchase behavior of listed companies. At the same time, it also provides some reference for the supervision of China's share repurchase and the construction of laws and regulations.

Construction of Financial Performance Evaluation Index System of Listed Companies

The core of the success of the repurchase of corporate shares is to examine whether the business achieve the desired purpose through the repurchase. A key problem in the evaluation of repurchase performance is the construction of the performance evaluation index system.According to national regulations and previous research literature, the financial index system is built.

Construction Principles of Financial Performance Evaluation Index System of Listed Companies. There are a lot of indicators measuring the performance of listed companies. The lack of choice of indicators may lead to incomplete performance in evaluation. Too many choices may lead to the research process being too complicated. It can be seen that the selection of appropriate indicators is of vital importance to the evaluation results and the rationality of the relevant analysis. In the construction of evaluation index system, it should follow the following principles: Scientific Principles, Objectivity Principle, Comparability Principle, Feasibility Principle and Systematic Principle.

The Establishment of an Evaluation Index Framework. The evaluation index framework includes 5 first-level indicators and 18 secondary indicators [13]. As shown in Table 1.

Table 1 Financial Performance Evaluation Index System of Listed Companies

Level 1 Indicators	Level 2 indicators
Profitability	Earnings per share(EPS)
	ROE
	Return on assets(ROA)
	Sales gross margin(SGM)
	OPE
Ability to grow	Net profit growth rate(NPGR)
	Net asset growth rate(NAGR)
	Main business income growth rate(MBIGR)
	Total asset growth rate(TAGR)
Operating capacity	Inventory turnover(IT)
	Accounts receivable turnover(ART)
	Current asset turnover(CAT)
	Total asset turnover(TAT)
Solvency	Assets and liabilities(AL)
	Flow ratio(FR)
	Quick ratio(QR)
Cost control	Sales rate(SR)
	The proportion of the three costs(PoTC)

Profitability: (a) Earnings per share: in other words, Earnings Per Share (EPS), also known as per share profits after-tax , earnings per share, which refers to the ratio of profit after tax and the total number of shares.it is that the ordinary shareholders holding a share of the enterprise can enjoy the net profit or bear the net loss of the enterprise. Earnings per share is often used to reflect the results of business operations and measure the profitability of ordinary shares and investment risk, which is one of the important financial indicators to assess the profitability of enterprises, predict the growth potential of enterprises, and then make the relevant economic decision .

(b) Return on net assets, also known as the rate of return on shareholders' equity: The indicator mainly reflects the profitability of listed companies. The higher value of the indicator can indicate that the investment in the enterprise will get a higher income. On the contrary, it means that the profitability of the owner's equity is relatively weak.

(c) Return on Assets, also known as Total Asset Profit Margin, Total Return on Assets, Total Asset Profit Margin: The index refers to the ratio of the pre-tax profit to the average amount of the assets in a certain period,which is usually used to evaluate the effectiveness of corporate asset operations. The higher value of the index indicates that the higher utilization of assets. The lower indicator shows that the lower efficiency of asset utilization. In this regard,enterprises should analyze the reasons,speed up cash flow, improve sales margins and thereby enhance the management level.

(d) Sales gross margin, also known as gross margin, is the basis for corporate sales net profit margin: The sales margin determines whether an enterprise is profitable.

(e) Profit margin of main business(OPE): This indicator refers to the ratio of the profit of the main business to the net income of the main business in a certain period of time.The profit margin of the main business reflects the main business income of each unit of the enterprise can bring the corresponding profit of the main business, which reflects obtain the ability of the main business of the enterprise. This index is an important index to evaluate the operating efficiency of the enterprise.

Growth Capacity: (a) Net profit growth rate, also known as after-tax profit: The index refers to the total amount of corporate profits minus the enterprise income tax, which is the net income the shareholders can be allocated in that year. The level of net profit growth rate reflects the business efficiency is good or bad and it is an important measure of business efficiency indicators.

(b) Net asset growth rate: The net asset growth rate of the enterprises reflects the development capability of the enterprises, which reflects the value-added and hedging of the assets of the enterprises.The higher return on net assets can indicate that the stronger vitality of enterprises.

(c) Main business income growth rate: The indicator can be used to measure the life cycle of the company's product and to determine the company's stage. In general, if the main business income growth rate is more than 10%, it indicates that the company is a growing company. If the growth rate is 5% -10%, it indicates that the company will enter a recession. If the growth rate is less than 5%, it indicates that the company has entered a recession.

(d) The total asset growth rate: also known as the total asset expansion rate, reflects the enterprise's assets growth during the inspection period.

Growth Capacity: (a) Inventory turnover rate: This indicator is widely used in business management decisions and can measure the efficiency of the company's inventory operations to evaluate enterprise performance and operating results. Inventory turnover rate is usually used to reflect the turnover rate of corporate inventories and it is an important indicator to reflecting the operating capacity of enterprises.

(b) Accounts receivable turnover rate: The turnover rate of accounts receivable is the ratio of the net sales income to the average balance of receivable accounts. It reflects the turnover rate of corporate receivable accounts .

(c) Current assets turnover rate: This indicator is mainly used to evaluate the enterprise asset utilization rate. It is the ratio of the net income of the main business to the total amount of the average current assets in a period of time.

(d) The total asset turnover rate: The total asset turnover reflects the efficiency of the enterprise's asset utilization and management. It usually used to examine the efficiency of the enterprise's asset operations. The higher total asset turnover will bring about the faster turnover of the company's total assets, the stronger sales capacity and the higher asset utilization efficiency.

Solvency: (a) Asset-liability ratio: also known as debt management ratio, is a indicator to measure corporate solvency .Asset-liability ratio is also often used to assess the ability of enterprises to expand their operations and reflect the use of shareholders' equity.The higher the index is, the greater the company's ability to expand business will be. The interest of the shareholders can be fully utilized, but the risk is greater. If asset-liability ratio is too high because the business situation is not good , there will be unable to repay the principal or interest.In that case, the enterprise may be forced to repay or reorganization and shareholders' equity will be damaged.

(b) Flow ratio: The indicator, also known as the working capital ratio, is an indicator of short-term solvency. Because of the different operating conditions in different industries, there are differences in the standard of corporate liquidity ratios in different industries. The higher current ratio can bring about the greater ability for the firm to realize the asset and the stronger short-term solvency. On the contrary, the firm's ability to realize assets and the short-term solvency is weaker. The current ratio is a modest indicator. If the index is too high, the company's current assets is too much compared to the current liabilities. There may be a backlog of corporate inventory, or too much cash, or both.

(c) Quick ratio: It refers to the ratio of quick assets to current liabilities. It is often used to measure the ability of an enterprise to repay current liabilities using immediate liquidity assets.

Cost Control: (a) The cost of sales, also known as marketing costs: It is the proportion of corporate marketing expenses accounted for sales.Sales costs include promotional fees, marketing management fees, salesman fees, market research fees and advertising costs. So in the case of the fixed company's sales , the lower cost of sales indicates the better benefits of the enterprise. On the contrary, it indicates the worse efficiency of the enterprise.

(b) The proportion of the three costs: The three charges refer to the company's spending during the accounting year, including the following three items: operating expenses, administrative expenses and financial expenses. The three-point rate usually refers to the ratio of the three costs to the main business income.

An Empirical Analysis on the Financial Effect of Share Repurchase of Listed Companies

Sample Selection and Data Acquisition

Select the listed company shares repurchase event occurring in Shenzhen and Shanghai from July 2015 to March 2016 through searching and organizing material from the Shenzhen stock exchange website and the Shanghai stock exchange website . There are a total of 105 A-share listed companies posting share repurchase announcement.they are excluded as follows:one company's repurchase plan was stopped to implement,four companies fail to repurchase because of not meeting the repurchase conditions , 51 companies' repurchase program has not implemented, 7 companies' repurchase program is being implemented ,42 companies' repurchase program has been completed , and ultimately choose those 42 listed companies as the study sample.

Event Study. The date of the event is the date of the repurchase announced by the Company Board of Directors. If the announcement date coincides with that the stock market close, then the date of the event is the first trading day after the resumption of events.Assuming that the listed company's date of the event is in the quarter of T, then the quarter of the survey is T quarter, the first quarter before T quarter, the second quarters before T quarter, the third quarters before T quarter, and the first quarter after T quarter , the second quarter after T quarter and the third quarter after T quarter, which are recorded as T-3,T-2,T-1,T,T+1,T+2 and T+3.

Selection of Indicators. Because there is usually a strong correlation between the financial indicators in the specific analysis process, the original data can not be used for statistical analysis, otherwise the conclusion is not objective. The correlation of the original indicators was analyzed by the Spearman test, and the indicators that were not suitable for factor analysis were excluded. By statistical test and combining economic significance to analysis, finally eliminate sales gross margin, the proportion of three costs, net profit growth rate, inventory turnover, accounts receivable turnover, asset-liability ratio, the main business profit margins and main business income growth rate those eight financial indicators. Abtain10 financial indicators such as earnings per share, return on net assets, return on assets, sales expense ratio, quick ratio, current ratio, net asset growth rate, total assets growth rate, current asset turnover rate and total asset turnover rate.

Spearman Correlation Test. By using the SPSS software, we can obtain the Bartlett test value, the degree of freedom, the significant level and the KMO test value of the correlation coefficient matrix before and after the repurchase of the 10 listed financial indicators of the listed companies, as shown in Table 2.

Table 2   KMO and Bartlett's Test

		T-3	T-2	T-1	T	T+1	T+2	T+3
Kaiser-Meyer-Olkin Measure Sampling Adequacy		0.565	0.655	0.637	0.543	0.602	0.538	0.527
Bartlett's Test of Sphericity	Approc. Chi-Square	223.87	273.39	668.01	887.58	603.55	400.62	207.63
	df	42	42	42	42	42	42	42
	Sig.	0.000	0.000	0.000	0.000	0.000	0.000	0.000

It can be seen from Table 3 that the KMO values belong to the interval [0.5,0.7], the Bartlett test value is larger, the P value is less than the significance level, the correlation coefficient matrix pass the Bartley spherical test, therefore, the selected index is suitable for factor analysis.

Changes in the relevant financial indicators before and after the repurchase of the sample companies. The event window elected as the comparative study is the first three quarters and the last three quarters of the month in which the announcement date (event day)was announced. Comparing the average financial index of the three quarters in the two event window, the results are shown in Table 3 .

Table 3 Changes in the relevant financial indicators before and after the repurchase of the sample companies

Event Window	EPS	ROE	RoA	SR	FR	QR	TAGR	NAGR	TAT	CAT
Before the Announcement	0.31	11.91	6.66	30.46	4.11	2.63	36.54	42.02	0.44	0.74
After the Announcement	0.48	11.96	6.50	30.05	1.93	2.02	78.82	94.29	0.40	0.72
Rate of Change	54.75	0.39	2.41	1.35	52.98	23.43	115.73	124.38	7.90	3.13

From the above table (Table 5), it can be seen that the average of the relevant financial indicators in three quarters after the stock repurchase announcement is higher than three quarters after the stock repurchase announcement. This shows that the company's profitability, solvency, operational capacity, cost control and growth capacity have improved after the announcement of the stock repurchase.

Conclusion and Suggestions

Conclusion. Share repurchase can adjust financial indicators in the short term: Stock repurchase can improve the company's profitability, operational capacity, reduce the company's solvency in the short term .

Stock repurchase can optimize the company's capital structure and enhance the level of financial leverage: Stock repurchase is a process of reducing assets or increasing liabilities, and the optimization of capital structure increases the fixed debt interest to a certain extent, resulting in the rate of the ordinary shares' change of the per share profit is greater than the rate of EBIT change, directly leading to financial Leverage and bringing more surplus to the common shareholders .

Share repurchase enables the financial flexibility of listed companies: Listed companies can choose to repurchase shares when they have sufficient funds in order to reduce the number of shares in circulation.the cash dividend that the company will pay will be reduced.At the same time earnings per share increase. The shareholders can enjoy the benefits of rising stock prices and can also get more allocations on earnings per share. Meanwhile, the cash flow of listed companies only need to maintain the daily expenses, thus to reduce the cost of enterprises and improve the utilization of funds.

Recommendations. The post-evaluation system should be established and improved from the multidimensional impact on the repurchase of the shares, so as to further compare the changes in the performance of the company before and after the share repurchase.

An effective signal transmission mechanism should be established to reduce the blindness for external investors due to the information asymmetry. On the other hand, it can also promote the management, reduce costs and improve the value of the company.

We should improve the relevant laws and regulations, strengthen supervision and management, standardize the information disclosure process, and protect the legitimate and reasonable operation of share repurchase.

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